

second virtual connection to be used in transmitting the packet to another logical network;

means for receiving a first message for resource reservation from said another logical network;

means for transmitting a second message for the resource reservation based on the first message received by the means for receiving to said one logical network when existence of the first and second virtual connections is detected, and determining not to transmit the second message when the existence is not detected and the resource reservation is judged not to be achieved;

means for transferring the packet received through the first virtual connection onto the second virtual connection according to the correspondence relationship stored in the memory; and

wherein the means for transmitting includes means for determining whether to transmit the second message responsive to the existence, when a quality of service indicated in the first message is judged not to become satisfied unless the packet is transferred by the means for transferring.

8. (Amended) A router apparatus, comprising:

a memory capable of storing a correspondence relationship between a first virtual connection to be used in receiving a packet from one logical network and a second virtual connection to be used in transmitting the packet to another logical network;

means for receiving a first message for resource reservation from said another logical network;

means for transmitting a second message for the resource reservation based on the first message received by the means for receiving to said one logical network;

means for canceling the second message transmitted by the means for transmitting when either the first or second virtual connection does not exist and the resource reservation is judged not to be achieved;

means for transferring the packet received through the first virtual connection onto the second virtual connection according to the correspondence relationship stored in the memory; and

wherein the means for canceling includes means for determining whether to cancel the second message responsive to the existence, when a quality of service indicated in the first message is judged not to become satisfied unless the packet is transferred by the means for transferring.

14. (Amended) A method of operating a router usable to transfer a packet from a first node belonging to one logical network to a second node belonging to another logical network, comprising the steps of:

receiving a first message for resource reservation from the second node;

storing a correspondence relationship between a first virtual connection available for receiving a packet of a specified flow from the first node and a second virtual connection available for transmitting the packet of the specified flow to the second node, when the first and second virtual connections exist;

transmitting a second message for the resource reservation based on the first message to the first node, when the correspondence relationship can be stored;

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determining not to transmit the second message, when the correspondence relationship cannot be stored and the resource reservation is judged not to be achieved;

transferring a packet received through the first virtual connection onto the second virtual connection according to the stored correspondence relationship;

transferring, at a network layer, a packet from said one logical network to said another logical network; and

transmitting the second message irrespective of whether or not the correspondence relationship can be stored, when the resource reservation required by the first message can be achieved by scheduling the network-layer transferring step.

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15. (Amended) A method of operating a router usable to transfer a packet from a first node belonging to one logical network to a second node belonging to another logical network, comprising the steps of:

receiving a first message for resource reservation from the second node;

storing a correspondence relationship between a first virtual connection available for receiving a packet of a specified flow from the first node and a second virtual connection available for transmitting the packet of the specified flow to the second node, when the first and second virtual connections exist;

transmitting a second message for the resource reservation based on the first message to the first node, when the correspondence relationship can be stored;

determining not to transmit the second message, when the correspondence relationship cannot be stored and the resource reservation is judged not to be achieved;

requesting, in response to the first message, a set-up of the first virtual connection to said one logical network;

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transferring a packet received through the first virtual connection onto the second virtual connection according to the stored correspondence relationship; and

transmitting a third message for notifying a failure of the resource reservation required by the first message to the second node, when the second virtual connection does not exist and the resource reservation required by the first message is judged not to be achieved unless the packet can be transferred by the transferring step.

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20. (Amended) A method of operating a router usable to transfer a packet from a first node belonging to one logical network to a second node belonging to another logical network, comprising the steps of:

- receiving a first message for resource reservation from the second node;
- transmitting a second message for the resource reservation based on the first message to the first node;
- storing a correspondence relationship between a first virtual connection available for receiving a packet of a specified flow from the first node and a second virtual connection available for transmitting the packet of the specified flow to the second node, when the first and second virtual connections exist;
- transmitting a cancellation message to the first node for canceling the second message, when the correspondence relationship cannot be stored and the resource reservation is judged not to be achieved;
- transferring a packet received through the first virtual connection onto the second virtual connection according to the stored correspondence relationship; and
- transferring, at a network layer, a packet from said one logical network to said another logical network,

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and wherein the step of transmitting the cancellation message includes the step of determining to transmit the cancellation message, when neither scheduling the network-layer transferring step nor storing the correspondence relationship can achieve the resource reservation required by the first message.

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22. (Amended) A method of operating a router usable to transfer a packet from a first node belonging to one logical network to a second node belonging to another logical network, comprising the steps of:
receiving a first message for resource reservation from the second node;
transmitting a second message for the resource reservation based on the first message to the first node;
storing a correspondence relationship between a first virtual connection available for receiving a packet of a specified flow from the first node and a second virtual connection available for transmitting the packet of the specified flow to the second node, when the first and second virtual connections exist;
transmitting a cancellation message to the first node for canceling the second message, when the correspondence relationship cannot be stored and the resource reservation is judged not to be achieved;
setting up, in response to the first message, the second virtual connection in said another logical network;
transferring a packet received through the first virtual connection onto the second virtual connection according to the stored correspondence relationship; and
waiting for the first virtual connection set up for a predetermined period,

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and wherein the step of transmitting the cancellation message includes the step of determining to transmit the cancellation message, when the first virtual connection is not set up after the waiting step and the resource reservation required by the first message is judged not to be achieved unless the packet can be transferred by the transferring step.

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26. (Amended) A method of transferring a packet from one logical network to a plurality of nodes belonging to another logical network via a router, a default virtual connection being set up between the router and each of the nodes, comprising the steps of:

setting up a dedicated virtual connection from the router to at least one of the nodes, the dedicated virtual connection being dedicated for transmitting a packet of a specified flow to the nodes and capable of being a point-to-multipoint connection;

transferring the packet of the specified flow received from said one logical network onto the dedicated virtual connection without a network-layer destination analysis;

receiving a message through the default virtual connection from one of the nodes; and

maintaining a connection to said one of the nodes based on receipt of the message, the connection being a part of the dedicated virtual connection.

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33. (New) A router apparatus, comprising:
a memory capable of storing a correspondence relationship between a first virtual connection to be used in receiving a packet from one logical network and a

second virtual connection to be used in transmitting the packet to another logical network;

a receiving unit configured to receive a first message for resource reservation from said another logical network;

a transmitting unit configured to transmit a second message for the resource reservation based on the first message received by the receiving unit to said one logical network when existence of the first and second virtual connections is detected, and determining not to transmit the second message when the existence is not detected and the resource reservation is judged not to be achieved; and

a transferring unit configured to transfer the packet, for which the resource reservation is achieved, from the first virtual connection to the second virtual connection according to the correspondence relationship stored in the memory.

34. (New) The apparatus according to claim 33, further comprising a requesting unit configured to request, responsive to the first message received by the receiving unit, a set-up of the first virtual connection to said one logical network.

35. (New) A router apparatus, comprising:
a memory capable of storing a correspondence relationship between a first virtual connection to be used in receiving a packet from one logical network and a second virtual connection to be used in transmitting the packet to another logical network;

a receiving unit configured to receive a first message for resource reservation from said another logical network;

a transmitting unit configured to transmit a second message for the resource reservation based on the first message received by the receiving unit to said one logical

network;

a canceling unit configured to cancel the second message transmitted by the transmitting unit when either the first or second virtual connection does not exist and the resource reservation is judged not to be achieved; and

a transferring unit configured to transfer the packet, for which the resource reservation is achieved, from the first virtual connection to the second virtual connection according to the correspondence relationship stored in the memory.

36. (New) The apparatus according to claim 35, further comprising

a set-up unit configured to set up, responsive to the first message received by the receiving unit, the second virtual connection in said another logical network.

37. (New) A method of operating a router usable to transfer a packet from a first node belonging to one logical network to a second node belonging to another logical network, comprising:
receiving a first message for resource reservation from the second node;
storing a correspondence relationship between a first virtual connection available for receiving a packet of a specified flow from the first node and a second virtual connection available for transmitting the packet of the specified flow to the second node, when the first and second virtual connections exist;

transmitting a second message for the resource reservation based on the first message to the first node, when the correspondence relationship can be stored;

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determining not to transmit the second message, when the correspondence relationship cannot be stored and the resource reservation is judged not to be achieved;

and

transferring the packet, for which the resource reservation is achieved, from the first virtual connection to the second virtual connection according to the stored correspondence relationship.

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38. (New) The method according to claim 37, further comprising requesting, in response to the first message, a set-up of the first virtual connection to said one logical network.

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39. (New) A method of operating a router usable to transfer a packet from a first node belonging to one logical network to a second node belonging to another logical network, comprising:

- receiving a first message for resource reservation from the second node;
- transmitting a second message for the resource reservation based on the first message to the first node;
- storing a correspondence relationship between a first virtual connection available for receiving a packet of a specified flow from the first node and a second virtual connection available for transmitting the packet of the specified flow to the second node, when the first and second virtual connections exist;
- transmitting a cancellation message to the first node for canceling the second message, when the correspondence relationship cannot be stored and the resource reservation is judged not to be achieved; and

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transferring the packet, for which the resource reservation is achieved, from the first virtual connection to the second virtual connection according to the stored correspondence relationship.

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40. (New) The method according to claim 39, further comprising setting up, in response to the first message, the second virtual connection in said another logical network.

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41. (New) The method according to claim 40, wherein the second message is transmitted after the second virtual connection is set up.

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42. (New) The method according to claim 40, wherein the second message is transmitted before the second virtual connection is set up, and whether to transmit the cancellation message is determined based upon whether the second virtual connection cannot be set up.

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43. (New) The method according to claim 39, further comprising transmitting a third message for notifying a failure of the resource reservation required by the first message to the second node, when the cancellation message is transmitted.

REMARKS

In the Office Action dated January 17, 2001 ("OA"), the Examiner objected to claims 3, 5, 8, 10, 14-16, 20, 22, and 25, but stated that such claims would be allowable if rewritten in independent form (OA, ¶3). With this Amendment, Applicants amend claims 3, 8, 14-15, 20 and 22 to include the limitations of the base claims and any intervening claims, and therefore respectfully submit that these claims and claims 5, 10, 16, and 25, which depend from claims 3, 8, 14, and 20, respectively, are in condition for allowance.